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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,168	03/01/2004	Charles L. Sobchak	MTRL023US0 (SC13176ZC)	1010
37141 7590 04/23/2007 FORTKORT GREETHER & KELTON LLP 9442 N. Capital of Texas Hwy. Arboretum Plaza One, Suite 500 AUSTIN, TX 78759			EXAMINER LEE, SIU M	
			ART UNIT	PAPER NUMBER
			2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/790,168	Applicant(s) SOBCHAK ET AL.	
	Examiner Siu M. Lee	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 16, 22 and 35 is/are rejected.
- 7) ☒ Claim(s) 2-15, 17-21, 23-34, 36-40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/1/2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/30/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because:

(1) The label 202(1) and 202(2) for filter bank for I channel and filter bank for Q channel is missing from figure 2.

(2) The label 209 in figure 2 is not mentioned in the specification.

(3) The label 414 for the threshold is missing in figure 4.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeap et al. (US 2001/0050987 A1) in view of Furukawa (US 6,115,614).

(1) Regarding claim 1:

Yeap et al. discloses a system comprising:

a narrowband processing component (narrowband noise estimator unit 28 in figure 2) configured to receive a signal (signal from band pass filter 26 in figure 2) and identify one or more narrowband interferers in the received signal (the noise estimation unit 28 will extract the common mode RF interference around 3MHz, 7MHz, and 10 MHz, paragraph 0028, lines 1-3), the narrowband processing component including a filter bank (filters 34/1, 34/2 and 34/3 in figure 2) configured to separate the received signal into a predetermined number of channel bands (the noise estimation unit 28 comprises a set of three programmable bandpass filter units 34/1, 34/2, 34/3 having passbands each of about 500kHz, centered at 3MHz, 7MHz, and 10 MHz, paragraph 0027, lines 10-14);

a wide band processing component (band pass filter 26 and wide band digital noise estimation unit 30) coupled to receive both real and quadrature components of the

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received signal (Yeap et al. fails to explicitly disclose the signal includes quadrature and real signal component, however, the output signal of the BPF 26 in figure 1 is a very high speed digital subscriber loops (VDSL) signal, since the VDSL signal uses QAM modulation method, it is inherent that the output signal of the BPF 26 contains quadrature and real signal);

a soft decision metric generator (control unit 60 in figure 1) coupled to both the narrowband processing component and the wide band processing component (control unit 60 is coupled to the narrow band noise estimator 28 and the wide band digital noise estimation unit 30 in figure 1), the soft decision metric generator configured to produce metrics based on predetermined thresholds (control unit 60 determine for each band (3MHz, 7MHz, 10MHz) whether or not the power spectral density exceeded the envelop in a predetermined number x of a predetermined previous number Y of the block, if it did, the control unit 60 adjusts control signal to tune the corresponding filters, paragraph 0040, lines 2-11); and

a filter component configured to receive coefficients from the soft decision metric generator, the filter component configured to cancel the one or more narrowband interferers (the corresponding bandpass filter 34/1, 34/2 or 34/3 will be tuned by the control signal from the control unit and the corresponding bandstop filter of bandstop filter unit 52 in figure 2 to the center frequency of the band in which the envelop was exceeded, paragraph 0040, lines 11-13)

Yeap et al. fails to explicitly disclose the wide band processing component configured to provide an average level for an unfiltered version of the received signal.

However, Furukawa discloses using a filter unit for averaging of the received signal (the averaging filter unit 5 in filter 5 received pilot signal reception level and takes an average of the levels, column 4, line 66-column 5, line 2).

It is desirable to provide an average level for an unfiltered version of the received signal because the propagation loss measurement error is improved. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to replace the band pass filter 26 with the averaging filter unit of Furukawa to improve the reliability of the system.

(2) Regarding claim 16:

Yeap et al. further discloses a system wherein the soft decision metric generator (control unit 60 in figure 1) is configured to produce a center frequency adjust soft metric, the center frequency adjust soft metric providing a center frequency for a narrowband subject to interference thereby enabling the filter component to filter the narrowband interference (the control unit 60 in figure 1 adjust the control signal to tune the corresponding of the bandpass filters 34/1, 34/2, 34/3 and the corresponding bandstop filter of bandstop filter unit 52 to the center frequency of the band in which the envelope was exceeded, paragraph 0040, lines 8-13).

4. Claims 22 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeap et al. (US 2001/0050987 A1).

Yeap et al. discloses an apparatus comprising:

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receiving an in-channel signal, the signal including quadrature and real signal components (Yeap et al. fails to explicitly disclose the signal includes quadrature and real signal component, however, the output signal of the BPF 26 in figure 1 is a very high speed digital subscriber loops (VDSL) signal, since the VDSL signal uses QAM modulation method, it is inherent that the output signal of the BPF 26 contains quadrature and real signal);

filtering the signal in one or more filter banks, the filter banks separating the signal into a plurality of narrowband signals (the signal from the BPF 26 is passed to the narrow band noise estimator 28, from figure 2, the narrow band noise estimator 28 separates the signal into a plurality of narrowband signal, paragraph 0027, lines 10-14);

identifying at least one of the plurality of narrowband signals as subject to interference (the noise estimator unit 28 will extract the common mode RF interference around 3MHz, 7MHz and 10MHz, paragraph 0028, lines 1-3);

generating one or more metrics to enable dynamic alteration of characteristics for filtering the identified narrowband signal (the control unit 60 adjusts control signal F in figure 1 to tune the corresponding one(s) of the bandpass filters 34/1, 34/2 and 34/3 and the corresponding bandstop filters of bandstop filter unit 50 to the center frequency of the band in which the envelop was exceeded, paragraph 0040, lines 9-13); and

filtering the identified narrowband signal (once the noise estimation unit 28 and 30 have been tuned to the required bands, the control unit 60 begins to cancel the interference, paragraph 0041, lines 1-3).

Allowable Subject Matter

5. Claims 2-15, 17-21, 23-34, 36-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shattil (US 7,092,352 B2) discloses a cancellation system for multicarrier transceiver arrays. Nafie et al. (US 2002/0006174 A1) discloses interference cancellation narrow band interference in a wide band communication device. Chung et al. (US 2004/0008765 A1) discloses a joint adaptive optimization of soft decision device and feedback equalizer. Rakib et al. (US 6,426,983 B1) discloses a method and apparatus of using a bank of filters for excision of narrow band interference signal from CDMA signal. Toda et al. (US 6,192,067 B1) discloses a multistage interference canceller.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Siu M. Lee whose telephone number is (571) 270-1083. The examiner can normally be reached on Mon-Fri, 7:30-4:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Siu M. Lee
4/12/2007


CHIEH M. FAN
SUPERVISORY PATENT EXAMINER